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Safety Awareness for responders to Emergency Operations: Respiratory Protection

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Overview

- Introduction to Respiratory Program
- Types of Respirators
- Respirator Fit

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Objectives of this training - At the end of this short session, you should be able to:

1. Identify the hazards
2. Explain how to protect yourself from these hazards
3. Increase safety and health awareness

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Respiratory Protection Program

- Written SOPs for selection and use
- Selection based on hazard exposure
- Instruction and training
- Inspection, cleaning and disinfection
- Storage

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Respiratory Protection Program

- Surveillance of conditions and exposure
- Medical Surveillance - physician's written opinion
- Fit testing - Qualitative and Quantitative
- Program review and evaluation

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Respiratory Protection Program

Selection of respiratory protection equipment is of primary importance

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APR

- Air-purifying respirators do not have a separate air source.
- APRs utilize ambient air which is "purified" through a filtering element prior to inhalation.

Hood Type PAPR

Half-face

Full-face

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Protection Factor

APF	Respirator
10	Half-facepiece Respirator with Vapor Cartridge or Filter
50	Full-facepiece Respirator with Vapor Cartridge or Filter
1000	Full-facepiece Supplied Air Respirator operated in Pressure - demand mode
1000 to10,000	Full-facepiece Self-contained breathing apparatus operated in Pressure demand mode

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Personal Protective Equipment

- A respirator should ensure that the worker will not be exposed to the chemicals present above the applicable limits
  - American Conference of Governmental Industrial Hygienists Threshold Limit Values (TLVs)
  - OSHA's Permissible Exposure Limits (PELs)
  - NIOSH Recommended Exposure Limits (RELs)

Personal Protective Equipment

Any respirator can be compromised if:

- a worker has a high breathing rate
- the ambient temperature is high or low
- the worker has a poor facepiece to face seal

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Air - Purifying Respirators

- selectively remove specific airborne contaminants
- NOT for IDLH atmospheres
- use only in atmosphere with sufficient oxygen (19.5%)
- usually are a negative pressure device

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Air - Purifying Respirators

- Particulate filters
- Cartridges and canisters, with specific gas and vapor sorbents
- Combination devices

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Air - Purifying Respirators

RESPIRATOR CARTRIDGES/FILTERS

COLOR	APPROVED FOR
Black	Organic Vapors
Yellow	Organic Vapors and Acid Gases
White	Acid Gases
Green	Ammonia and Methylamine
Purple	HEPA, Dusts, Fumes and Mists
Orange stripe	for Dusts, Fumes and Mists in combination with vapor or gas

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Air - Purifying Respirators

Warning properties are essential to safe use of air-purifying respirators since they allow detection of contaminant breakthrough should it occur.

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Air - Purifying Respirators

Change your cartridges according to your employer's change schedule

Do Not Wait for

Contaminant Breakthrough

to Replace Your Cartridges

If You Experience

Contaminant Breakthrough,

You Experience Exposure !

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Self-Contained Breathing Apparatus

Employees engaged in emergency response to spills and releases and exposed to hazardous substances presenting an inhalation hazard or potential inhalation hazard shall wear positive pressure self-contained breathing apparatus (SCBA).

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Self-Contained Breathing Apparatus

- Escape Only SCBAs
- Entry and Escape SCBAs
  - open circuit - exhale to air
  - closed circuit - exhale to scrubber

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Self-Contained Breathing Apparatus

Decision Map

- Is atmosphere IDLH or likely to be?
- Is duration of air supply sufficient?
- Will bulk / weight of SCBA interfere with task?
- Will temperature affect either SCBA or worker?

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Supplies Air Respirators - SARs

- Supply AIR, not oxygen
- positive pressure & negative pressure types
- less bulky
- longer work period
- limitations

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Supplied Air Respirators- SARs

Decision Map

- Contaminant to air source?
- Hose length and mobility?
- Hose damage?
- Is atmosphere IDLH or likely to be?
- Interference with air line?

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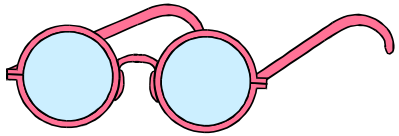
Respirator Fit

- Interference with fit



- Respirator fit testing
  - quantitative fit testing
  - qualitative fit testing